

## **Applicant Remarks**

### **Specification**

The amendments to the specification do not add new matter. The applicant amends the specification to match the priority claims as they appear on the PAIR system. The '283 application is a national stage of PCT/US05/04802 therefore the priority claims were part of the application as filed.

### **Claims**

Claim 1 is amended to bring the limitations of now cancelled Claim 2 into its body. These limitations are not disclosed by Ellis. Respectfully, the Examiner is mistaken to think that the "linear" function disclosed by Ellis is the same as the limitations disclosed in Claim 1, as amended. Ellis states, where cited by the Examiner, [40, 49] "The heuristic is a rating system which generates a linear function of the properties for each segment, namely, nominal length, cues and deviation from nominal length." Ellis is describing lengths of time. Ellis does not mention calculating a linear function of spectral magnitude values. Spectral magnitude is not the "nominal length" of time or "deviation from nominal length" of time. "Cues" are according to Ellis, points of time. Applicant requests that this rejection be withdrawn.

Claim 3, as amended, claims an entirely different formula from that disclosed by Ellis. Ellis states at [23, 35] "...dividing the respective value of each band by the sum of the values in the band both above and below the respective frequency band." This is not the same as the "pre-determined number of spectral magnitude values." It is a sum of the actual values "in the band both above and below the respective frequency band." Therefore, this disclosure does not disclose the same claim limitation as claimed in Claim 3. Applicant requests that this rejection be withdrawn.

Claim 4. Ellis does not disclose the same formula as claimed. Ellis states that "numerical values between zero and one are assigned to the characteristics.....and a linear combination of the assigned values is formed to produce the false match rating R." [27,1] Ellis discloses that the linear combination is of L, "the length of the respective segment," D, "the distance from the missing match," some M and some E. [26, 36-64]. These are variables that have an instance for each segment of video programming. Segments are not frequency bands. Ellis does not disclose any function that is a linear combination of the "ordinal index of the spectral magnitude value within the frequency band divided by a predetermined constant." Therefore, the disclosure does not disclose the same claim limitations as Claim 4. Applicant requests that this rejection be withdrawn.

Claims 5-6. Applicant requests that these rejections be withdrawn for the reasons stated under Claim 1, on which these two claims are dependent.

Claim 7. Ellis discloses something entirely different than what is claimed here. See explanation regarding Claim 4. Ellis is not disclosing anything about spectral magnitude values. Therefore, the disclosure does not disclose the same claim limitations as Claim 7. Applicant requests that this rejection be withdrawn.

Claim 8. This claim is dependent on Claim 7. Therefore, the Ellis disclosure does not disclose the same claim limitations as Claim 8. Applicant requests that this rejection be withdrawn.

Claims 9-13. Ellis is describing a system for detecting television programming, specifically, television advertising. It is well known that television broadcasts are synchronized to specific and high-accuracy clocking. Therefore, the problem of artificial speed changes to programming is not present in the television context as opposed to the broadcast music context that Applicant's invention addresses. As a result, nowhere in Ellis does it describe how to adjust the relative width of the frequency bands so that if the detected signal is a different speed than the stored reference signal, the matching process can still be workable. While the portions of Ellis cited by the Examiner generally describes a signal recognition system, [4, 58 - 5, 10] , the disclosure of a genus does not act to anticipate a species. In this claim, the species is a recognition method where the frequency bands are set to "be substantially larger than the magnitude of the frequency shift that results from a predetermined maximum amount of variation in the playback speed...." The limitations in the claims dependent on Claim 9 are not mentioned in Ellis. While Ellis describes pre-selected frequency bands, Ellis does not describe them where

they are set up to account for a pre-determined amount of speed difference from the reference signal. Therefore, the Ellis disclosure does not disclose the same claim limitations as Claims 9-13. Applicant requests that this rejection be withdrawn.

Claim 14. Ellis discloses "frames" as referring to video frames. Ellis' signature is "a 16 bit digital word for each video frame...." [1, 37]. Ellis is not disclosing "sequential time frame[s]" nor a "first signature ... from a pre-determined number of spectral magnitude values detected during the time frame...." as claimed here. Ellis describes calculating a signature for each video frame. Ellis does not disclose applying a sequencing test to the matches. Therefore, the Ellis disclosure does not disclose the same claim limitations as Claim 14. Applicant requests that this rejection be withdrawn.

Claims 16-17. Ellis is describing "average luminence" values, not audio spectral values. Ellis states "...the difference bewteen the average luminence values of the two corresponding pixel areas..." [19, 46] It is well known that luminence refers to the intensity of the video pixel, and does not refer to the audio signal. Therefore, the Ellis disclosure does not disclose the same claim limitations as Claims 16-17. Applicant requests that this rejection be withdrawn.

Claim 18. Ellis does not describe these calculations as matching criteria. In fact, Ellis is rather obscure regarding how the matching actually takes place. Ellis has some disclosure at [2, 35-51], but it appears to be a bit for bit matching process, where some

bits are masked off as don't-care values. Ellis states that "...an error count of one is accumulated if these bits differ in value..." [2, 44]. This is describing a Boolean logic function, not a calculation of L-1 norm or any actual difference values. Comparing the bits of two 16 bit digital words and counting the matching digits is not the same as calculating an L-1 norm or any differences between the numbers, as disclosed and claimed by Applicant. Therefore, the Ellis disclosure does not disclose the same claim limitations as Claim 18. Applicant requests that this rejection be withdrawn.

Claim 19. Ellis makes no mention of using anything like the  $2K+1$  formula for determining positive matches. Therefore, the Ellis disclosure does not disclose the same claim limitations as Claim 19. Applicant requests that this rejection be withdrawn.

Claims 20-25. Ellis does use the word "correlator", but nowhere does Ellis disclose that "correlator" is calculating a linear correlation between the time frame indices associated with the detected audio signal signatures and those associated with the possible matching reference signal signatures. Ellis is obscure with regard to what "correlator" is referring to. Prior art must be enabling to preclude later claims. All Ellis discloses is that "the correlator performs the requested matching operation..." [11,38]. The word "correlator" is used as a noun and is not the technical term "linear correlation." To inject a linear correlation functionality using the time indices into the unknown "correlator" is hindsight analysis, which is impermissible. And Ellis does not disclose performing a regression analysis on the time indices in order to calculate a slope and checking that the slope is within some pre-determined tolerance. Therefore, the Ellis disclosure does not disclose

the same claim limitations as Claims 20-25. Applicant requests that this rejection be withdrawn.

Claim 26. See comments regarding Claim 19. In addition, Ellis does not disclose checking for the monotonicity of the matching time indices as being part of a matching criteria. Therefore, the Ellis disclosure does not disclose the same claim limitations as Claim 26. Applicant requests that this rejection be withdrawn.

Claim 27. Ellis does not describe any of the detailed claim limitations in this claim, especially with regard to rearranging the signature digits in order to speed up the search algorithm. None of this is disclosed by Ellis. Ellis is describing at [16, 14-64] a way of calculating the signatures from the video data comprising a video frame. Ellis states "If the Hotelling transformation process is applied to a video signal as described above, relatively large clump signatures may not be broken up as finely as desired." [16, 64]. Therefore, the Ellis disclosure does not disclose the same claim limitations as Claim 27. Applicant requests that this rejection be withdrawn.

Claim 28. Ellis does not disclose how matching occurs. Prior art must be enabling to preclude later claims. All Ellis discloses is that "the correlator performs the requested matching operation...." [11,38]. Where the Examiner cites Ellis, at [40, 49-53], Ellis is not referring to any kind of search process. Ellis does not disclose binary searches, B

Tree searches, a linear search, heuristic tree searching, depth first searching or breadth first searching in order to find matching sequences of signatures. Therefore, the Ellis disclosure does not disclose the same claim limitations as Claim28. Applicant requests that this rejection be withdrawn.

Claim 30. Ellis is disclosing a linear combination of "nominal length, cues and deviation from nominal length." [40, 49.] These are not spectral magnitude values.

Claims 31-36. These claims are dependent on the prior claims and therefore the comments made above apply as well.